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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,591	12/21/2004	Jonathan Sweat	3165-111	2640

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WASHINGTON, DC 20005

EXAMINER
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HOLT, ANDRIAE M

ART UNIT	PAPER NUMBER
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1609

NOTIFICATION DATE	DELIVERY MODE
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08/23/2007

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-PAT-Email@rfem.com

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/518,591		SWEAT ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Andriae M. Holt		1609	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 29-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/21/2004</u>  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Specification***

The disclosure is objected to because of the following informalities: 1) misspelling of the word "soil" under "Background of the Invention" section, lines 13,18, 21, and 22, 2) use of the word "an" under "Background of the Invention" section, page 1, line 17, page 2, line 18, "Detailed Description" section, page 3, line 9. The word "an" should be replaced with the word "in", 3) misspelling of the word "microcapsule", "Background of the Invention" section, page 2, line 18.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 38 is rejected under 35 U.S.C. 102(b) as being anticipated by Gabard et al. (EP 0,953,285).

Applicant claims a method of inhibiting the growth of an undesired plant by contacting the plant with a herbicidally effective amount of a microcapsule composition. The microcapsule composition includes a dinitroaniline compound

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and the median diameter of the capsule from 3 micrometers to 10 micrometers.

The microcapsule composition is effective against crabgrass. Applicant also claims a method of safening a desirable crop from the effects of an herbicide applied to control undesirable plants using the microcapsule composition comprising a dinitroaniline compound.

Gabard et al. discloses a mixture comprising 2-[2,4-dichloro-5-(2-propynyloxy)phenyl]-5,6,7,8-tetrahydro-1,2,4-triazolo[4,3- $\alpha$ ]pyridine-3(2*H*)-one (azafenidin, Formula I) and at least one dinitroaniline herbicide of Formula II, which have been discovered to exhibit a crop safening effect while retaining or synergistically increasing weed control (page 2, lines 25-58-page 3, lines 1-5). Gabard et al. discloses the mixtures preferred for enhanced herbicidal utility include: a) Formula I and the compound of Formula II, pendimethalin (dinitroaniline compound, instant invention) and d) Formula I and the compound of Formula II, trifluralin (dinitroaniline compound, Instant invention) (page 3, lines 8-18). Gabard et al. further discloses the compositions can be used as methods of controlling undesired vegetation comprising applying to the locus of the vegetation herbicidally effective amounts of the preferred mixtures and preferred herbicidal compositions (page 3, lines 24-26) (method comprising applying a herbicidally effective amount of a microcapsule composition comprising a dinitroaniline compound to the vicinity of the plants of the desired crop, Instant invention).

Gabard et al. further discloses the active ingredients can be (micro) encapsulated and further formed into a suspension or solid formulation (page 5,

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lines 9-10) (microcapsule composition, Instant invention). Gabard et al. further discloses that while the Formula I compound is a highly active herbicide effective in controlling many agronomically important weeds, it can cause temporary injury to crops such as sunflower even in preemergent application (page 8, lines 33-34). Mixing the Formula I herbicide with one or more dinitroaniline herbicides of Formula II is discovered to provide a remarkable reduction in herbicide injury to crops such as sunflower while retaining or even synergistically increasing control of weeds such as chickweed (page 8, lines 34-37) (safening a desirable crop from the effects of a herbicide, Instant invention). Gabard et al. further discloses mixtures of the Formula I and Formula II herbicides are particularly valuable for control of a wide variety of agronomically important grass and broadleaf weeds in sunflower crops while causing little to no crop injury when applied preemergence to the crop under field use conditions (page 8, lines 37-38). All of the limitations of claim 38 are the met by Gabard et al.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (US 5,665,674), Lo (US 5,310,721) and Benoff (US 5,705,174) in combination.

### **Applicant's Invention**

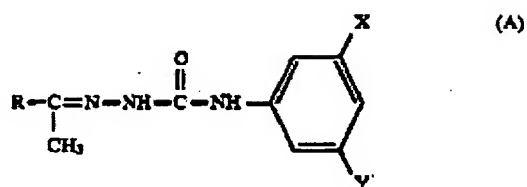
Applicant claims a method of inhibiting the growth of an undesired plant by contacting the plant with a herbicidally effective amount of a microcapsule composition. The microcapsule composition includes a dinitroaniline compound and the median diameter of the capsule from 3 micrometers to 10 micrometers. The microcapsule composition is effective against crabgrass. Applicant also claims a method of safening a desirable crop from the effects of a herbicide applied to control undesirable plants using the microcapsule composition comprising a dinitroaniline compound.

**Determination of the scope of the content of the prior art**

**(MPEP 2141.01)**

Anderson et al. teaches the use of auxin transport inhibitors, herbicidal semicarbazones, as potentiators or enhancers of herbicides, as well as co-application of such auxin transport inhibitors and herbicides, compositions containing at least one auxin transport inhibitor in combination with at least one herbicide and use of these in combating or controlling undesired plant growth and in plant growth regulation (col. 1, lines 13-19). Anderson et al. teaches especially preferred auxin transport inhibitors are compounds of Formula A:

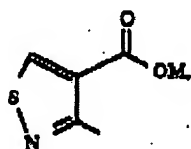
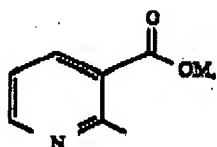
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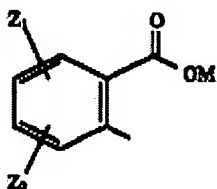
wherein.

X and Y represent independently, hydrogen, fluorine or chlorine, and

R is the group



or



wherein  $Z_1$  and  $Z_2$  are independently hydrogen, fluorine or chlorine and M is hydrogen, or a salt forming moiety e.g. an alkali metal cation or an optionally substituted ammonium cation.

Diflufenzopyr, herbicide component in claim 29 of the instant invention is an auxin transport inhibitor semicarbazone, as evidenced by the Corn and Soybean Herbicide Chart, page 2 and is also a Compound according to Formula A as evidenced by Compendium of Pesticide Common Names, see Structure.

Diflufenzopyr and dicamba, herbicide components in claims 29 of the instant invention, are the components of *Distinct*, also evidenced by the Corn and Soybean Herbicide Chart, page 2, col. 2.



Anderson et al. further teaches co-application results in herbicidal activity, which is significantly superior to the additive effectiveness of the individual active substance (col. 2, lines 42-44). Anderson et al. teaches co-application is understood to be concurrent, or immediately sequential application (e.g. within 24 hours), application as a tank mix or applications of fixed combination premixes (col. 2, lines 51-54). Anderson et al. further teaches the preferred modes of application include tank mix prepared by adding an auxin transport inhibitor to a tank containing the other herbicide partner and an appropriate surfactant (col. 5, lines 43-46) (claim 29, Instant invention, applying as a tank mix).

Anderson et al. teaches that herbicides which may be potentiated by use of auxin transport inhibitors, especially compounds of Formula A include: growth regulators including benzoic acids, e.g. dicamba (col. 2, lines 55-62) and growth inhibitors including dinitroanilines e.g. trifluralin and pendimethalin (col. 3, lines 31-33) (claims 29 and 31, Instant invention, dinitroaniline compound with a herbicide formulation comprising diflufenzopyr or dicamba or diflufenzopyr and dicamba and specific dinitroaniline compound pendimethalin or trifluralin). Anderson teaches the suitability of specific co-applications for pre- or post-emergent uses and selectivity will depend on the partners chosen (col. 4, lines 48-50) (claim 29, a method for preemergence control of undesirable plant species). Anderson further teaches that depending on the choice of co-application partners both pre- and post-emergent activity on a large range of broadleaf and grassy weeds may be achieved (col. 5, lines 47-49). Examples of

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weeds include *Digitaria sp.*-e.g. crabgrass (col. 6, line 1) (claim 32, undesired plant species is crabgrass).

Anderson et al. further teaches crop selectivity will also usually depend upon choice of partners. Compounds of Formula A for example exhibit excellent selectivity in corn and small grain crops and can also be used in turf and fallow applications (col. 6, lines 33-36).

Lo teaches a process for the preparation of microcapsules having a capsule wall of a polymeric substance enclosing a water-immiscible material (col. 1, lines 11-13). Lo teaches that in the process of the invention, it is possible to encapsulate a very wide range of agrochemicals, for example herbicides, plant growth regulators, insecticides acaricides, fungicides, nematocides, safeners, and actoparasitocides (col. 4, lines 25-29). Lo further teaches with respect to their chemical constitution, these substances may belong to a very wide range of compound classes (col. 4, lines 30-33): dinitroanilines, including pendimethalin and trifluralin (col. 5, lines 1-4) and miscellaneous, dicamba (col. 5, lines 51-56).

Lo teaches the agricultural chemicals to be encapsulated need not be limited to only one type, but may be a combination of two or more various types, for example two herbicides or a herbicide with an insecticide or a safener (col. 6, lines 5-9) (claim 29, instant invention, microcapsule composition, comprising a dinitroaniline compound with a herbicide formulation comprising diflufenzopyr or dicamba or diflufenzopyr and dicamba).

Benoff et al. teaches a process for the preparation of microcapsule compositions, methods for using those microcapsule compositions containing

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those microcapsule compositions and microcapsules prepared by the process of the invention (Abstract). Benoff teaches that the process of the invention is particularly suitable for the preparation of microcapsules containing herbicidal compounds and insecticidal compounds (col. 3, lines 34-36). Herbicidal compounds especially suitable for use in the invention include dinitroaniline compounds such as pendimethalin and trifluralin (col. 3, lines 36-39) (claims 29 and 31, instant invention, microcapsule composition comprising dinitroaniline compound, pendimethalin or trifluralin).

Benoff et al. further teaches the microcapsules prepared by the process of the invention preferably have a median diameter of about 3 micrometers to 50 micrometers and more preferably about 5 micrometers to 15 micrometers, the ranges of claim 30, 3 micrometers to 10 micrometers of the instant invention.

#### **Ascertainment of the difference between the prior art and the claims**

##### **(MPEP 2141.02)**

Anderson et al. does not teach microcapsule compositions and the median diameter of the microcapsule from 3 micrometers to 10 micrometers. It is for this reason Lo and Benoff et al. are combined.

Lo does not teach the microcapsule has a median diameter from 3 micrometers to 10 micrometers or the desired plant species is crabgrass. It is for this reason Anderson and Benoff et al. are combined.

Benoff et al. does not teach combining the dinitroaniline compound with diflufenzopyr or dicamba or diflufenzopyr and dicamba. It is for this reason Anderson et al. and Lo are combined.

### **Finding a prima facie obviousness**

#### **Rationale and Motivation (MPEP 2142-2143)**

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Anderson et al., Lo and Benoff et al. to produce a method of controlling undesirable plant species with a herbicidally effective microcapsule composition comprising dinitroaniline with diflufenzopyr or dicamba or diflufenzopyr and dicamba. In view of *In re Kerkhoven*, 205 USPQ 1069 (C.C.P.A. 1980), it is prima facie obvious to combine two or three compositions each of which is taught by prior art to be useful for the same purpose in order to form a third composition that is to be used for the very same purpose. The idea of combining them flows logically from their having been individually taught in prior art, thus claims that requires no more than mixing together two or three conventional herbicides set forth prima facie obvious subject matter. It is known in the art that combining herbicides increase the efficacy of a herbicide such that the maximum level of control or growth regulation for a given application rate of a herbicide is increased, or alternatively, the application rate of a herbicide giving optimum control or growth regulation can be reduced.

It is also known in the art that microcapsules have many benefits, including, but not limited to: protection of the active ingredients from environmental degradation, manipulation of bioavailability and persistence, reduction of phytotoxicity to seeds and crops, improved selectivity between target and nontarget plants, and improved handling qualities of formulations. As taught by Lo, agricultural chemicals to be encapsulated need not be limited to only one type, but may be a combination of two or more various types, for example two herbicides or a herbicide with an insecticide or a safener.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings of Anderson et al., Lo and Benoff et al. to formulate a method of controlling undesirable plants that would combine herbicides to exploit the strong properties of each herbicide while minimizing any weakness or undesirable properties. By co-formulating the herbicides in a microcapsule composition, one would be able to produce a herbicide that would not only increase the spectrum of annual weeds controlled, but reduce the phytotoxicity to seeds and crops, improve the selectivity between the targeted undesired plants and the crops and improve the handling qualities of formulations.

Claims 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benoff et al. (US 5,705,174) in view of Soper (US 3,257,190).

### **Applicant's Invention**

Applicant claims a method of inhibiting the growth of an undesired plant by contacting the plant with a herbicidally effective amount of a microcapsule composition. The microcapsule composition includes a dinitroaniline compound and the median diameter of the capsule from 3 micrometers to 10 micrometers. The microcapsule composition is effective against crabgrass. Applicant also claims a method of safening a desirable crop from the effects of an herbicide applied to control undesirable plants using the microcapsule composition comprising a dinitroaniline compound.

### **Determination of the scope of the content of the prior art**

#### **(MPEP 2141.01)**

The teachings of Benoff et al. are incorporated herein by reference and are therefore applied in the instant rejection as discussed hereinabove.

In addition to the teachings incorporated herein by reference, Benoff et al. also teaches the invention provides a method for controlling undesirable plant species which comprises applying to the foliage of the plants or to the soil or water containing seeds or other propagating organs thereof, a herbicidally effective amount of a microencapsulated herbicide which is microencapsulated by the process of the invention (col. 5, lines 6-11) (Claim 33, Instant invention).

**Ascertainment of the difference between the prior art and the claims**  
**(MPEP 2141.02)**

Benoff et al. does not teach the undesired plant is crabgrass or the desired plant is lettuce, tomatoes, or corn. It is for this reason Soper is joined.

Soper teaches novel processes for eliminating germinating and seedling weed grasses and selected broadleaf weeds employing conditions in which an N,N-di-substituted 2,6-dinitroaniline is the active ingredient (col. 1, lines 15-18). Soper teaches a novel group of extremely active 2,6-dinitroaniline compounds having a trifluoromethyl group in the 4 position of the aniline ring (col. 1, lines 18-22). Soper further teaches novel compounds having the trifluoromethyl group in the 4 position show a considerably greater herbicidal activity against germinating and seedling weed grasses and broadleaf weeds than the corresponding compounds wherein the trifluoromethyl group is replaced by a lower alkyl group (col. 2, lines 34-51). Illustrative compounds coming within the scope of the formula include: N,N-di-n-propyl 4-trifluoromethyl-2,6-dinitroaniline, which is known in the art as the chemical name for trifluralin (col. 2, lines 51-53) (claims 33 and 35, Instant invention, dinitroaniline compound, particularly trifluralin).

Soper teaches herbicidal compositions containing a compound coming within the scope of one of the formulas of the invention as its active ingredient can be employed by the processes of this invention to eliminate the following grasses in the seedling stage from an infested area: undesirable grasses such as crabgrass (*Digitaria sanguinalis* and *Digitaria ischaemum*) (col. 3, lines 69-75) (claim 36, Instant invention, undesired plant is crabgrass).

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Soper teaches suitable crop areas that can be treated include, cotton, soybean or tomato fields (col. 3, lines 9-11). Soper further teaches that in addition to the crops listed above the following other crops will tolerate concentrations of a N,N-di-substituted-2,6-dinitroaniline sufficient to kill germinating and seedling grasses and broadleaf weeds include lettuce (col. 3, lines 22-31) and as would be expected, fields containing established crop plants which belong to the grass family; monocotyledonous plants such as sweet corn and field corn (col. 3, lines 35-38) (claims 37, Instant invention, desired plant is lettuce, tomatoes or corn).

### **Finding a prima facie obviousness**

#### **Rationale and Motivation (MPEP 2142-2143)**

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Benoff et al. and Soper to produce a microcapsule composition comprising dinitroaniline used to control crabgrass in lettuce, tomatoes or corn because it is known in the art that dinitroaniline herbicides are excellent herbicides for the elimination of seedling or germinating weed grasses and broadleaf weeds in various stages of growth. It is also known in the art that because of the highly specific action of dinitroaniline compounds they can be used safely to treat fields containing established crop plants, which belong to the grass family.

It is also known in the art that microcapsules have many benefits, including, but not limited to: protection of the active ingredients from



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environmental degradation, manipulation of bioavailability and persistence, reduction of phytotoxicity to seeds and crops, improved selectivity between target and nontarget plants, and improved handling qualities of formulations.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings of Benoff et al. and Soper to enhance the properties of the known dinitroaniline compounds, particularly pendimethalin or trifluralin. By formulating the herbicides in a microcapsule composition, one would be able to produce a herbicide that would reduce the phytotoxicity to seeds and crops, improve the selectivity between the targeted undesired plants and the crops, improve the handling qualities of formulations and manipulate the bioavailability and persistence of the active ingredient.

None of the claims are allowed.

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**Conclusion**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andriae M. Holt whose telephone number is 571-272-9328. The examiner can normally be reached on 9:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Stucker can be reached on 571-272-0911. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



JOHANN RICHTER  
SUPERVISORY PATENT EXAMINER  
GROUP 1200